

REMARKS

1) The Examiner has subjected this application to restriction under 35 U.S.C. 121. The Examiner has formed two groups of claims, Group I directed to claims 1-33 and 37-47 drawn to a capacitor, and Group II directed to claims 34-36 drawn to a method of making a capacitor. The Examiner has asserted that these groups of claims represent distinct inventions and may properly be restricted. Applicants hereby confirm their provisional election of Group I, directed to claims 1-33 and 37-47, for examination. However, the restriction requirement is traversed. It should be noted, that the Commissioner may statutorily require the election of inventions "If two or more independent and distinct inventions are claimed in one application." In the instant case the Examiner is alleging that the inventions of Groups I and II are distinct, although absolutely no showing of such distinctness has been made.

The Examiner's attention is directed to 37 C.F.R. 1.141(b) where allegedly different classes of inventions may be included and examined in a single application provided they are so linked as to form a single inventive concept. This is exactly the type of case for which the rule was promulgated, i.e., to avoid burdensome and unnecessary restrictions. It is also asserted that the requirement to restrict the present application would be an unnecessary burden upon the Applicants and the Examiner's failure to follow the mandates of the statute and regulation would be a denial of due process. For these reasons it is respectfully urged that the restriction requirement be rescinded.

2) The examiner has rejected claims 1-7, 10-14, 16, 18-24, 28-33, 37-43, 45, and 47 under 35 U.S.C. 102 over Appelt et al. Applicants respectfully assert that this ground of rejection has been overcome by the instant amendment.

The present invention relates to embedded capacitors. The present claims, as amended, are directed to a multilayered construction suitable for forming capacitors which is formed by a process which comprises:

- a) applying a first thermosetting polymer layer onto a surface of a first electrically conductive layer;
 - b) applying a central polymerizable layer onto a surface of the first thermosetting polymer layer, which central polymerizable layer comprises a polymerizable precursor of a polyethylene terephthalate, a polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an aromatic polyamide, a polyether-nitrile, a polyether-ether-ketone, or combinations thereof;
 - c) applying a second thermosetting polymer layer onto a surface of a second electrically conductive layer; thereafter
 - d) attaching the first electrically conductive layer to the second electrically conductive layer such that each of the first and second thermosetting polymer layers and the central polymerizable layer are positioned between the first and second electrically conductive layers; and thereafter
 - e) polymerizing said polymerizable layer;
- wherein each of said first thermosetting polymer layer, said second thermosetting polymer layer and said central polymerizable layer optionally further comprises a filler material.

Indeed Appelt et al. relates to printed circuit board capacitors and the like. However, Applicants respectfully submit that Appelt et al. fails to teach every aspect of the claimed invention as amended. Specifically, Appelt fails to teach the five-layered structure of the present invention which includes a central polymerizable layer comprising a polymerizable precursor of a polyethylene terephthalate, a polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an aromatic polyamide, a polyether-nitrile, a polyether-ether-ketone, or combinations thereof. It is submitted that in the presently claimed structure, the required central polymerizable layer between two thermosetting polymer layers is a key feature of the invention, resulting in a novel structure having high capacitance density, exceptional integrity and short circuit resistance, high resistance to thermal stress and low moisture absorption.

Appelt discloses a four-layer structure, shown in Figs. 1A-4B, which includes two copper sheets 10 attached by two dielectric layers 12 or 13 therebetween. While Fig. 5B does show a five-layer structure, this specific embodiment includes only a sheet of a polyimide between two dielectric layers 13. Applicants submit that none of the presently required polymerizable precursor materials for the central polymerizable layer are disclosed by Appelt, and in fact the Examiner specifically states that Appelt does not disclose a polyamide-polyimide (a polyamide) layer at all.

Applicants submit that the absence of the above described features of the present invention from the cited reference renders the present invention patentably distinct from Appelt et al. It is therefore respectfully urged that the 35 U.S.C. 102 rejection has been overcome.

3) The examiner has rejected claims 8, 9, 25, 44, and 46 under 35 U.S.C. 103 over Appelt et al. The examiner states that it would be obvious for one skilled in the art to formulate the present invention upon a reading of Appelt. Applicants respectfully submit that this rejection has been overcome by the instant amendment.

As stated above, while Appelt does relate to the field of embedded capacitors, it fails to teach or suggest several key features of the presently amended claims. As stated above, Appelt fails to teach a five-layer structure which includes two electrically conductive layers, two thermosetting polymer layers, and a central polymerizable layer which comprises a polymerizable precursor of a polyethylene terephthalate, a polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an aromatic polyamide, a polyether-nitrile, a polyether-ether-ketone, or combinations thereof.

The inventive structure surprisingly results in the formation of a thin embedded capacitor material having high capacitance density, exceptional integrity and short circuit resistance, high resistance to thermal stress and low moisture absorption. For all the reasons above, it is urged that one skilled in the art would not have been inspired to devise the presently claimed structure upon a reading of Appelt et al. It is therefore

respectfully urged that the 35 U.S.C. 103 rejection has been overcome, and should be withdrawn.

4) The examiner further rejects claims 15, 17, 26, and 27 under 35 U.S.C. 103 over Appelt et al., in further view of Fenoglio et al. The examiner takes the position that it would have been obvious for one skilled in the art to combine these references to produce the presently claimed invention. Applicants respectfully disagree.

The arguments against Appelt et al. are repeated from above and apply equally here. Specifically, Appelt fails to teach the presently claimed five-layer structure which includes two electrically conductive layers, two thermosetting polymer layers, and a central polymerizable layer which comprises a polymerizable precursor of a polyethylene terephthalate, a polyethylene naphthalate, a polyvinyl carbazole, a polyphenylene sulfide, an aromatic polyamide, a polyether-nitrile, a polyether-ether-ketone, or combinations thereof.

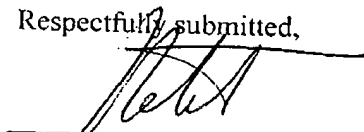
The Examiner cites Fenoglio et al. in an effort to fill the voids of Appelt. Applicants respectfully submit that this is not the case. Fenoglio relates to the use of 3,5-diamino-t-butylbenzene for forming polyamide, polyimide, and polyamide-imide polymers and copolymers. However, Fenoglio does nothing more than describe the formulation of such polymeric materials. It does not describe the use of these materials as polymerizable precursor components of a multi-layer structure. It further does not teach or suggest how or why one would modify Appelt to devise the presently claimed invention.

Furthermore, polyimides have now been removed from the claims. "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." In re Geiger, 2 U.S.P.Q.2d 1276, 1278 (CAFC 1987).

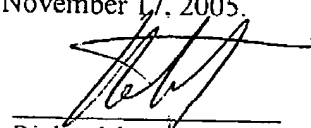
Applicants submit that one skilled in the art would not be inspired to formulate the present invention upon a combined reading of Appelt and Fenoglio. It is therefore respectfully requested that the 35 U.S.C. 103 rejection be withdrawn.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the examiner believes there is any matter which prevents allowance of the present application, it is requested that the undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,


Richard S. Roberts
Reg. No. 27,941
P.O. Box 484
Princeton, New Jersey 08542
(609) 921-3500
Date: November 17, 2005

I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office (FAX No. 571-273-8300) on November 17, 2005.


Richard S. Roberts
Reg. No. 27,941